



Listing of Claims

Claims 1-21. Canceled.

Claim 22. (currently amended): A method of improving systemic immunity of a mammal with respect to an antigen or a hapten, through intranasal administration of an immunologically effective amount of a pharmaceutical composition comprising, the *Klebsiella pneumoniae* membrane protein OmpA having the sequence SEQ ID No. 2, combined with the antigen or the hapten.

Claim 23. (previously presented): The method of Claim 22 wherein the membrane protein is obtained by a recombinant process.

Claim 24. (previously presented): The method of Claim 23 wherein the recombinant membrane protein is renatured in the presence of a detergent selected from the group Zwittergent 3-14, Zwittergent 3-12, and octylglucopyranoside.

Claim 25. (canceled)

Claim 26. (previously presented): The method of claim 22 wherein the antigen or hapten are selected from the group consisting of proteins, peptides, polysaccharides, oligosaccharides and nucleic acids.

Claim 27. (previously presented): The method of Claim 26 wherein the antigen or hapten originate from a virus or a bacterium.

Claim 28. (previously presented): The method of Claim 27 wherein the antigen or hapten comprise at least one protein fragment of a microorganism responsible for pathologies of the airway.

Claim 29. (previously presented): The method of Claim 28 wherein the microorganism is selected from the group consisting of RSV, parainfluenza virus (PIV), influenza virus, hantavirus, streptococci, pneumococci and meningococci.

Claim 30. (previously presented): The method of Claim 26 wherein the antigen or hapten comprises at least one protein fragment of the human or bovine respiratory syncytial virus (RSV).

Claim 31. (previously presented): The method of Claim 30 wherein the antigen or hapten comprises at least one fragment of the G protein of the RSV.

Claim 32. (previously presented): The method of Claim 30 wherein the antigen or hapten comprises at least one of the sequences SEQ ID No. 3 through SEQ ID No. 136.

Claim 33. (previously presented): The method of Claim 31 wherein the antigen or hapten comprises at least one of sequences SEQ ID No. 3 through SEQ ID No. 136.

Claim 34. (previously presented): The method of Claim 22 wherein the membrane protein is covalently coupled to the antigen or hapten.

Claim 35. (previously presented): The method of Claim 34 wherein one or more bonding elements is introduced into the membrane protein and/or introduced into the antigen or hapten to facilitate the coupling, forming a hybrid protein.

Claim 36. (previously presented): The method of Claim 35 wherein the bonding element introduced is an amino acid.

Claim 37. (previously presented): The method of Claim 36 wherein the hybrid protein, obtained after coupling between the membrane protein and the antigen or hapten, wherein the antigen or hapten is protein in nature, is prepared by genetic recombination.

Claim 38. (previously presented): The method of Claim 37 including a transformed host cell which is capable of expressing a hybrid protein containing said membrane protein coupled to said antigen or hapten.

Claim 39. (previously presented): The method of Claim 22 which does not contain an adjuvant.

Claim 40. (canceled)